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AN INTRODUCTORY LECTURE DELIVERED BEFORE THE MEDICAL CLASS OF HARVARD UNIVERSITY, OCT. 2, 1871.

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GENTLEMEN OF THE MEDICAL AND DENTAL SCHOOLS:—

ON this eighty-eighth anniversary of the opening of our Medical College, it is my peculiar privilege to welcome you to the old School, with its mode of instruction reformed, amplified, systematized, made progressive.

Here in America nothing is allowed to grow old. Change, and that change often progress, attacks every art, every calling, every institution. As the human body is itself subjected to a constant interchange of atoms, and dies at last through incessant use, so the art of medicine changes season by season; is modified by fashion, or the progress of the sister sciences. The medical knowledge and the medical practice of to-day are not those of twenty years ago; neither should the medical education of to-day be that of former years.

With no abatement of deference and of gratitude for all that the Medical Department of Harvard University has taught us in the past, it is not assumption to hope that its progress in the future will be still more marked. For in this ancient and stable University there has come to pass a change in medical education, more radical, more thorough, and, as we believe, more beneficial in its effects on the future of our profession, than any other since the foundation of our college.

When, seventeen years ago, I sat upon these benches as a medical student at my first course of Lectures, how well I remember my confusion as to *what* I had better do. Aghast at the multitude of subjects of study; overwhelmed by the numerous lectures poured into my ears each hour by a fresh professor; with no one to guide, no rule to follow, no law of selection to consult, no classification of terms, or years or capabilities whatever, what wonder that we all undefwent a mental surfeit, whose consequences tortured our future rest with a nightmare of unassimilated knowledge! Four busy months the course went on with unabated ardor, and then the bulk of the class dispersed, to follow out, with intermittent and languid diligence, their studies during the remainder of the year. The first year's student pursued here the same studies as the third year's one; and if he finally learned what branches to select, it was only at the expense of many wasted weeks, or months.

Any one department of medicine, as anatomy for instance, crowds the beginner with such a mass of isolated facts, that it is several years before he can assort and generalize them for use. But the unfortunate student of former times had *all* departments thrust upon him, at once, to choose from without a guide, and to confuse him with their multifarious details.

The changes in the mode of instruction to which all new students who enter for our medical degree will be subjected, and in which we cordially invite all students who have partially completed their studies, here or elsewhere, to join, are chiefly these:—

Instruction will be uniform and continuous throughout the entire year; and progressive throughout three years.

Studies and students will be classified, and divided into a three years course.

Examinations will be distributed throughout the three years.

The mode of teaching will be more demonstrative, practical and experimental, and less didactic, than formerly.

Lectures, recitations and practical exercises will, as heretofore, all be used as modes of instruction. But the proportion of recitations to lectures will be larger than before; while demonstrative and experimental study, in the Dissecting Room, the Chemical Laboratory, the Microscope Room, the Physiological Laboratory and the Au-

topsy Rooms; and clinical study in the Hospitals and Dispensaries, will be very greatly increased, and supplant, to a certain degree, the college lecture rooms.

This is not the hour in which to discuss the merits of demonstrative and experimental as compared with didactic instruction; clinical teaching with prepared and systematic lectures; or recitations, in which the student takes the active part, with lectures *ex cathedrâ*, where he merely listens and receives ideas.

There can be but little doubt that what we do is fixed by the doing more firmly in the memory, than what we see others do; that what we see makes more impression than what we hear; that what we learn to express in our own language is retained better, than what we are taught by listening to others.

To assure this advantage of the demonstration, the experiment, the clinical study and the recitation over the lecture, it is essential that all the class take active part in those exercises. And this they will be expected to do, since every student will have his place and time in the anatomical, physiological and chemical laboratories, and in the microscope room; and laboratory work will be as much required of him as attendance at lectures.

We would, however, by no means do away with the old lecture system. The lecture brings the teacher face to face with the whole class; gives a living significance to the dry teaching of medical treatises; enables the lecturer to select only those parts of written medicine which are valuable; and to add and enforce much practical wisdom that is not found in books.

We intend, therefore, to offer you full courses of lectures on all those subjects which cannot be made wholly demonstrative, or experimental; and some of which, as the anatomical, surgical and pathological departments, possess a wealth of illustration in plates, preparations and cabinet specimens.

It is sufficient for me, in these few prefatory remarks, to have glanced at the changes with which you will become familiar as the term goes on: and addressing myself now to the *new* members of our medical class, I propose to answer the first question which every student puts to his teacher,

How to Study Medicine?

A preliminary education is the first requisite. For the mind which has lain fallow during the impressionable years of youth is ill adapted to catch new ideas. It is sluggish to learn, tardy to acquire, and does not know how to use its faculties, although its memory may be retentive and its powers of observation acute. As a rule, men beginning a profession under the drawback of want of training do not arrive at distinction. It is rare to step directly from the plough or the workbench to professional eminence. Such cases are instances of genius, which would rise to the surface in spite of any obstacles.

The average mind, then, needs culture and training before beginning to study medicine. This preliminary education, however, need not be either academic, or collegiate. In fact, the strictly classical courses of many colleges are ill adapted to prepare the mind for medicine.

In our profession two qualities are especially needful, a quick perception and a well-balanced mind. Observation and judgment constitute the true physician. No other learning can compensate for the lack of these; and with these, a relatively ignorant man will succeed. We cannot read the sick by book-knowledge; we must study them as children learn, by observation. The diagnosis and the treatment of disease are a balance of probabilities, and cannot be successfully carried out without judgment, or common sense.

Whatever studies, then, cultivate the perception and the judgment constitute the best preliminary education for the medical profession. The natural sciences, chemistry, physics, natural history, mathematics, educate these faculties more than languages, literature or history; for the latter are better adapted to fluent speech, good memory and elegant tastes. The classics, however, are not to be thrown aside; since a fair knowledge of Latin and Greek is of inestimable value to the reader of medical literature; but such modern languages as the French and German, teeming with scientific research and medical publications, are, beyond doubt, the most directly useful to the physician.

Scientific schools, and schools of technology supply the kind of preliminary knowledge the medical student needs.

The academic department of our own University has been so far modified, of late, as to very well meet these requirements. But such is not the case in the undergraduate *curriculum* of most other colleges.

The natural sciences, the dead languages to a certain degree, and the modern languages are, then, to be especially cultivated

by the youth who means to study medicine.

Professional Studies.

We come now to the professional studies; the point at which you have arrived, who sit here for the first time.

The profession of medicine embraces both a Science and an Art.

A Science, based on certain fixed and definite branches of knowledge, as Chemistry, Anatomy, Physiology, Pathology.

An Art, consisting in the application of this knowledge to the treatment of disease, in the practice of Medicine, Surgery and Obstetrics.

In the purely scientific parts of medicine lie its only fixed principles and immutable laws. All else is changeable, uncertain, subject to modification from advancing scientific knowledge, and even from caprice.

He therefore who would build the superstructure of his profession on a sound basis can only do so by a profound acquaintance with Chemistry, Anatomy, Physiology and Pathology.

These constitute his earliest studies; and to three of them his first year's course is limited.

Chemistry.

Chemistry is the science of the fundamental structure of both the inorganic and organic worlds. Anatomy deals with compound bodies, though they be but atoms; chemistry deals with the ultimate elements of matter. It is the farthest depth to which we can conduct material investigations into the arcana of nature.

Chemistry concerns man both in his own structure and in everything that surrounds him; both in the discharge of his vital functions and in the changes of his body after death. To seek to know the human body in health, or to minister to it in disease, without chemical knowledge of its composition, or its forces, is to be merely a sciolist.

There was no chemical knowledge of oxygen, carbonic acid and the changes in respiration in the middle ages, and the smallpox patient of that time was shut up in a room with closely-drawn red curtains, the windows battened and the keyholes stopped; while those who had the miliary fever, or sweating sickness—a disease obsolete now—were put between two feather beds, and overlaid, until many expired in great agony.*

It is not too much to say that chemistry deserves the credit of a very large proportion of the advances in the medical knowledge and practice of late years. Its reform of our pharmacopœia has been equally radical, and startling to old authorities. Inert and incompatible remedies have been dissolved by it into their naked uselessness; the active principles of drugs have been eliminated from their crude and bulky envelopes of wood and bark, mucilage and fibre. The nurse's dogma, and even the poor Indian, have been pushed aside in its relentless progress.

It is chemistry, and not homœopathy, which has dissolved the nauseous dose into the minute and cleanly alkaloid; reduced the bulk of remedies, and taught the abuse of drugs.

This science is eminently one of experiment. It advances by questioning nature. It is to be learned by practical work in the laboratory, more than by lectures; the latter serving either to condense and recapitulate previous knowledge, or to illustrate, on a large scale, the effects of reagents on each other. Your first months of study should be passed in learning general chemistry at your desk in the laboratory, with reägents, blowpipe and test-tube. In the basement story we have now arranged ample facilities for the practical pursuit of chemistry, where one hundred desks, with apparatus, have been prepared for the use of the class.

Anatomy.

Anatomy, the cutting apart or dissecting of organized beings to learn how and of what they are made, is the most direct and fundamental, though it was not the earliest mode of understanding the human frame. Oracles, spiritualists, augurs, seers, priestly jugglers were the first authorities in medical matters; while Aristotle or Galen were still permitted to dissect only horses or dogs.

The self-sacrifice of Vesalius and other noble martyrs of anatomical science, and, among others, the life-long labors of Hunter, finally accumulated such a mass of information, and so conclusively proved its value, that the world got habituated to dissections, and allowed them to be peaceably pursued. Here in Massachusetts, the enlightened public opinion of the Commonwealth has legalized the practice of human dissection; a credit not yet shared, we regret to say, by many others of the United States.

It would be an idle abuse of our time to delay you with an explanation of the cardinal importance of anatomy to the medical student. The fact is self evident that this science is the very foundation of all his

* Hecker's "Epidemics of the Middle Ages."

other knowledge. It is, too, an exact and assured science; capable of demonstration; unchanged in its essentials for years past; occasionally altered in nomenclature and enlarged by new facts, but never losing a single approved truth, as laid bare by the scalpel. Its changes have been chiefly those of histology; while its grosser facts remain as fresh as in the days of Albinus.

It is equally capable of proof how directly surgery springs from, and is dependent on, anatomy. Surgical diagnosis is, to a great degree, anatomy applied; surgical operations are dissections on the living subject. Of this one fact you may be quite sure, that no man ever was an eminent surgeon who was not a good anatomist; and, also, that no surgeon was ever a good operator without having been first a neat dissector. The pains-taking, conscientious student who haunts the dissecting room in his leisure hours, to watch others if not to work himself, is, in nine cases out of ten, the one who becomes a good surgeon or a good physician. To neglect anatomy is to throw away everything. It should occupy all the time that you can possibly devote to it. Fortunate if you have already acquired a sufficient knowledge of general chemistry, before coming to the medical school, to enable you to give all your first year to anatomy, and its directly related science, physiology.

Of the dire effects of the lack of anatomical knowledge in the surgeon, hear John Bell:—

"If a surgeon, ignorant of the parts of the human body, should be called to perform even an established and regular operation, which he has often seen performed, how must he tremble at the thoughts of what he has to do! Acting only as he has seen others act, he is interrupted, startled, perplexed, with every new occurrence. He has foreseen nothing, provided for no accident, and every accident alarms him. He moves timorously onwards, like a blind man who walks with an air of confidence on an accustomed road, but when any new object presents itself, or the road is changed, is bewildered and lost.

"We see untaught men operating upon their fellow-creatures in cases of life and death without the slightest knowledge of the anatomy of the parts, much less any right ideas of their conditions, and new relations to each other in the state of disease.

"But such operators are seen agitated, miserable, trembling—hesitating in the midst of difficulties—turning round to their friends for that support which should come from within—feeling in the wound for things they do not understand—holding consultations amid the cries of the patient; and thus, while they are making ungenerous struggles to gain a false reputation, they are incurring reproaches which attend them through life."

You must take the knife into your own hand if you want to learn and remember anatomy. There is no royal road to this knowledge. Lectures, recitations, plates, books, all assist, but none can take the place of the dead body, in pursuing this science. You must dissect *con amore;* and, strange as this may sound to you, you will find it, in a few weeks, a fascinating pursuit. The marvellous machinery of life which you unfold layer by layer; the ideas you will receive; the analogies, not only to the rest of organic nature, but even to all the nicer mechanical laws and appliances; the pleasure of manipulating and seeing for yourself all that you have read in books; the combination of bodily and mental occupation, and the stimulus of the occasional discovery of anomalies and variations, all will lead you on, until you will find that nowhere do the hours fly so fast as in the dissecting room, and to no hours will you look back with a greater pleasure or satisfaction.

An experience of eight years as demonstrator has taught me—and you will see in the preface of my predecessor's Manual of Dissections that he shares the same views—that systematic treatises, illustrated dissectors, or plates, are a positive evil while dissecting. One simple book of dissections, like Harrison's, or Hodges's, or Ellis's Demonstrations, is all that is best.

Plates distract your attention from the dead subject; lead you to anticipate nature, and deceive you into thinking you have mastered the points thus illustrated, before you really know them. The whole subject-matter of your morning's or evening's dissection should be thoroughly "read up" before you enter the dissecting room; you must anticipate mentally what you are going to find under each covering of cellular tissue or fascia, and not turn to the book to see what it is after you have laid it bare. The mind must go before the eye, and the eye before the knife. Thus doing, you will find the country-lad, with his single worn copy of Wilson, surpass in anatomical knowledge him who pursues a more indolent course of dissections with the text-book of Gray and the plates of Bourgery.

The anatomical lecture is a daily lesson

of extreme value. It condenses and illustrates by a thousand analogies, diagrams or specimens, all that you labor out by yourselves. It explains to you, also, very many parts of anatomy that you cannot dissect. By no means neglect to follow it diligently; but also read, recite, and, above all, dissect, if you wish to know anatomy.

Recitations held over the dissected subject have seemed to me to fill a very useful place since I introduced them here some ten years ago. And you will find them continued now, even more fully than before.

As much time as you can spare must also be given to the microscope. It is in this direction that anatomical and pathological science are now making their chief advances. Fortunately the cost of these instruments is now reduced, so that the majority of students can afford to own one.

Finally, there is regional, or surgical anatomy, which is yet another department of this science. This you will learn in your second year. By it you are taught to mass your anatomical details into regions or groups, just as they exist in nature; as, for instance, in the anatomy of the neck, the axilla, or the groin. This is the form of anatomy you will use and mentally refer to, in the actual practice of your profession.

Physiology.

We now pass on to the remaining study of the first year, viz., *Physiology*. By this we mean the study of the *functions* of the body in health; as anatomy was the study of its structure.

Physiology, comparatively a modern science, has made great advances of late years, and is still in a transition state. As influencing and correcting the *practice* of medicine it is the most important of either the departments. Without the truths which it has taught us of the functions of different organs in health, in disease and under the influence of various medicinal agents, the science and practice of medicine would sink back a century.

The physiological effect of various lesions and the physiological action of drugs, are the modes of studying this department most directly conducive to practical results. Experiments have also often been verified by the absence or modification of certain functions in disease. We may all of us conduct a series of harmless experiments on ourselves in health. By Dr. Hammond in this country, and by numerous experimenters abroad, very useful results have been arrived at in this way.

Physiology is learned, like chemistry, only by experiment. It is to be pursued in a laboratory, and chiefly by experiments on the lower animals. The study by vivisection of the humbler members of the animal kingdom appears a very cruel one. And so it may, thoughtlessly, be made. We deprecate unnecessary repetitions of experiments; carelessness in causing pain, or consecutive mutilations of the same animal. But for the necessity and propriety of physiological vivisections, poisonings and medications of the lower animals, we would put in an earnest plea. By this path alone can therapeutics advance in certain knowledge. Experiments on the vital functions, and on the action of drugs are of the last importance to the well-being of man. We do not hesitate to use the lower animals for food. Why should we not use them to teach us to avoid pain, or disease? A swarm of insects would be ruthlessly destroyed that one man might sleep. Are a hundred or a thousand batrachian lives to be counted in the balance of human suffering?

Most opportunely, at the very time when we were obliged to look around for some way of teaching physiology in accordance with the new system of study, the thoughtful benefaction of one of your number, recently deceased—Dr. George Woodbury Swett—has given us the means to fit up a physiological laboratory, with microscope-rooms adjoining, in the upper story of this building.

Physiology may be advantageously followed, not only throughout the whole course, but even in the earlier years of practice. Experiments on one's self, especially in diet, regimen, or the taking of drugs, may often be carried on without interrupting the business of life. In no science does it hold so true that the student, of to-day, is the discoverer, of to-morrow.

Pathology.

Fourth and last of the group of *pure* sciences is *Pathology:* the study of the changes in the organs produced by disease; or, as it has been appropriately called, *morbid anatomy*. This is the only sound basis for the study of the natural history of organic disease, and is the final test of diagnosis.

The facilities for making autopsies are but grudgingly allowed by the general public. We cannot hope, under our form of government, for those far-reaching scientific edicts which enable a despotism to regulate the disposal of its subjects' remains as strictly as it regulates their lives. Popular prejudice and public opinion are sad stumbling blocks to be overcome.

You will, during your student years, have better facilities for pursuing pathology than you can enjoy in after life.

Let me urge you, then, never to neglect going to an autopsy. You will realize ten years hence, when settled, perhaps in a community that will rarely permit them, how great a boon a *post-mortem* examination of an obscure case would be to you. You will, I regret to say, see such examinations sometimes made in an imperfect manner through ignorance. You will even see the course of justice rendered uncertain by the incongruous results of coroners' inquests conducted by incompetent men.

As soon as you have acquired sufficient knowledge of healthy anatomy to appreciate morbid changes, frequent the autopsy room of the hospitals. Learn how to make an autopsy patiently and thoroughly. Follow out the case with care. Compare its past symptoms with the evidences of disease now patent to your eyes. Neglect almost anything else rather than miss an autopsy. It is worth more to you than a field-day of capital operations in the amphitheatre, or the most eloquent lecture on disease.

Neither does pathological research stop now with the ordinary *post-mortem* investigation. On the contrary, it has only just begun. The microscope takes up the inquiry when the eye fails; and the most important discoveries of morbid changes are now made through its aid. Microscopical sections of diseased organs are a necessary sequence of the *post-mortem* examination. In such sections, and in the minute study of tissues, rather than cells, we see a partial return tothe doctrines of Bichât. Microscopical sections reveal to us the pathology of tumors; the organic changes of the kidney, the brain or the heart. The discovery by microscopists of the cells of the connective tissue has overturned the older pathology, and substituted a clearer one. The microscope room, therefore, should be your resort during all the years of your study; since you will there seek to unravel the complexities of both healthy and morbid anatomy.

Finally, pathology is to be studied not only in the dead-house, but also in the Museum. That precious collection, brought together and cared for by the life-long devotion of the senior member of this faculty, is a monument of scientific industry. You will find the description and exhibition of morbid specimens, there collected, of inestimable value to you: and I venture to say that every physician who hears me wishes that he could enjoy those privileges now.

Chemistry, or the elements; *Anatomy*, or the healthy structure; *Physiology*, or the functions, of the human body, comprise the total of what you should seek to master during your first year of medical study.

Pathology, or the morbid changes of the body through disease, should follow next; and completes the purely scientific part of your profession. We pass now to the ART; or to science applied to the treatment of disease.

SURGERY.

Surgery should be studied next, and before the other branches of medicine. We place it first, for two reasons: it is the direct outgrowth of anatomy; and it constitutes a sort of external pathology. Fractures, wounds and tumors can be seen, recognized and studied more easily than dyspepsia, gastro-enteritis, or cirrhosis. It is in great part, also, a demonstrative study, to be taught in hospital wards and operating theatres.

Every young student would be a surgeon. Every young student, too, thinks more of operations, than of surgical pathology and practice. They get over both these errors in a few years. In reality operative surgery is not worthy of the attention that surgical diagnosis and treatment are. So, too, minor surgery is slighted for capital and bloody operations. As the Roman mob was attracted to the Flavian Amphitheatre only by hecatombs of victims, so the medical classes crowd our amphitheatres on field days of amputations, and desert their seats when nothing is to be done greater than a felon, a fistula or a hydrocele. In five years they find out their mistake; there is no audience so patient, on minor days in the hospitals, as one of young physicians.

In truth, the operative part of surgery is a very small part of that science. To diagnosticate an intra-capsular fracture of the shoulder or hip, or an abdominal tumor, is a far greater test of the surgeon.

Systematic courses on the principles and practice of surgery are necessary to the student. They teach us by experience; collate cases; illustrate by plates, models and specimens, and lay down for us the rules of surgical practice. The greater part, however, of practical surgery is taught clinically, in the hospitals: either by visits in the wards; by visits to a few cases, followed by a lecture; or by bringing each case before the audience and lecturing upon

it separately. Each mode possesses certain advantages. Clinical surgery, then, should occupy a due share of your attention.

The time has now arrived, in your second year, when you should begin to visit the hospitals. During the first year you had better remain in the dissecting room and the laboratories. We advise you to begin your clinical studies in the surgical part; and to devote your time, at first, to the dispensary and to the out-patient department of the hospitals. Here you will see minor surgery, and large classes of the more easily understood surgical cases. After three months spent there, and in the amphitheatres, seeing operations and listening to clinical lectures, you should begin to visit the wards, and continue your visits faithfully, as often as possible, until you graduate.

When you have once acquired knowledge enough to profit by hospital visits, you cannot spend too much time in them. But to see cases of fracture before you have studied the anatomy of the bones, or injuries and wounds before you can distinguish one tissue from another, is worse than a waste of time, since you are deluded into a *false* knowledge.

Materia Medica.

Before going into action the soldier must be taught the use of his arms: equally, before combatting disease, the student must become familiar with his weapons. All the medicinal agents of his *armamentarium* are included in *Materia Medica*. This should be studied under four heads, in a natural sequence, thus:—

Botany;
Pharmacy;
Physiological action of drugs;
Therapeutical action of drugs.

Botany, though insisted on in European schools, is greatly neglected in this country. It should form a part of the preliminary education of the medical student. And, during his second summer in the medical school, he should cultivate medical botany. This really forms a pleasant relaxation from his heavier studies; and a familiar acquaintance with the native materia medica of his neighborhood will give him a wider field from which to cull his remedies.

Pharmacy, the compounding and dispensing of drugs, can be properly studied only in an apothecary's shop. Practical instruction should be particularly insisted on in this department, for in none is the ignorance of the profession so prevalent or so disgraceful. Many physicians do not know the drugs they are giving, by sight; still less do they understand compounding them. Incompatible messes that cannot be made to run from the bottle, and others that decompose instantly on exposure to the sunlight, are daily prepared under the physician's prescription. There were lately prepared for a sick person powders containing the same materials which, in the ordnance department, are used to fill percussion shells. They require trituration with great care; and it is fortunate if they explode in the mortar of the compounder, rather than in the stomach of the patient.

The adulteration of drugs, which the physician, unacquainted with botany and practical pharmacy, may fail to recognize; and the combining of incompatible and nauseous doses, are fertile sources of scepticism as to the influence of any medicine in disease.

Botany and practical pharmacy should divide the second summer with pathology and hospital work. The study of the physiological action of drugs should be carried on in the laboratory, and in experiments on each other.

Medical chemistry will here demand a good share of attention, under its three chief divisions of incompatibles, toxicology, and urinary analysis.

According to the scheme of examinations, pathology, materia medica and medical chemistry terminate with the second year. Surgery, and the remaining studies to be named, extend through both the second and third years, and form the subjects of the final examination.

Theory and Practice.

We come now to Theory and Practice, as it used to be called, or, more properly, the Science and Practice of medicine. This embraces the natural history of disease, clinical medicine and therapeutics.

In this department your attention should be equally given to full and careful courses of lectures detailing the history of medicine, and to the observation and treatment of the sick, clinically.

In pursuing clinical medicine, or surgery, and studying the symptoms and changing aspects of disease at the bedside, all the higher faculties of observation, comparison, deduction and judgment will come into use. It will be fortunate for you if the perceptive powers have been carefully trained by your previous study of the purely scientific branches of medicine Sharpen your wits; use your eyes; keep always alert, and never neglect the slightest indication which points to a change in the delicate barometer of disease. Here is the true

field of your future labors, and by your skill in diagnosis, you will be judged all through life. I remember well the remark of my teacher, once, as we were passing the open door of a long ward of fever cases: "Nolan is better to-day," said he, glancing in, and alluding to a patient with severe typhoid, placed at the farther end of the room. "How do you judge?" asked I, surprised. "He has turned upon his side," was the quiet rejoinder. And so it proved; for the first signs of convalescence had come on.

Nothing is too trivial to be noticed in a case of acute disease; and from the minuteness and accuracy of description of the older observers, from Hippocrates or Sydenham down, we may well believe, that without any of the appliances of modern science by which we test the working of the thoracic or urinary organs, or the temperature of the body, they arrived at nearly as correct a notion of acute disease and of prognosis as we can do now. By all means study, and avail yourselves of every instrument and every aid to diagnosis which science puts in your hands; but beware that your eyes are not blinded, or your ears closed by authority, habit, tradition or purely scientific accuracy, to the faint symptoms of the expression, the breathing, the position or the voice of the very sick. As an example; to uncover the abdomen and look at the play of the diaphragm in a child gasping for breath will tell you whether you have to deal with croup or pneumonia. Do not repeat the mistake made by a young medical philosopher in my student days, who, when asked what he thought of a dying man by whose bedside he was standing, replied, that he would say "after he had examined his urine."

Do not neglect common cases for the rare ones, and do not overlook a chronic disease; for it is the common cases that will fill your practice, and the chronic ones that will prove your trial, through life. Work up your cases for the clinical conference. Get a case to treat yourselves, when you can. How that first case sinks into the memory! As years go on it is overlaid by a hundred others, but it is never blotted out. The first case of each disease stands to you as a clear-cut proto-type, to which to refer, and with which to compare, all the rest, forever.

Obstetrics.

In your third year you will come to the eighth and last great department of your profession, *Obstetrics:* and in this are usually included the diseases of women and children.

Equally important with others, the study of midwifery will lead you into a somewhat different field. An accurate knowledge of anatomy will stand you in good stead here. Study thoroughly the position and the relations of the female pelvic organs in the dead subject. Lectures, experiments with the manikin and actual cases of labor are equally needful to you to master this branch of medicine.

Medical Jurisprudence is a subdivision of our art about which we should know something, as those learn to their cost who are called into court to testify. Most colleges give a short course on it. It is naturally divisible into two parts.

First, The rules of expert testimony and the practice of courts of law, which would be best taught by lectures from a jurist.

Second, Expert testimony in toxicology, in surgery, in anatomy, in psychology and in obstetrics, which would be better learned in connection with each of those departments.

Finally, we have *specialties;* of which psychology, the eye, the ear, the skin, and syphilis are the chief, but by no means all. We have neither time nor occasion to dwell on them. We feel that we ought to utter one word of caution, however. Do not undertake the study of a specialty, until you have finished a complete medical education. And, if you practise a specialty, beware lest you lose sight of the general symptoms of your patient.

To recapitulate the order in which we would advise you to study medicine:—

Chemistry, anatomy, physiology.

Pathology, surgery, materia medica, medical chemistry.

Science and practice of medicine, therapeutics, obstetrics.

Medical jurisprudence, specialties.

We have thus provided a *three years'* course. Would that it could be made a four years' one. At present, however, this is as long as many of you can devote to professional study. For the more fortunate few who have a fourth year at their disposal, there are two ways in which it can be profitably spent; either in a hospital here, or by studying in Europe. If you can live a year in a hospital as house-physician or surgeon, you will gain more practical knowledge than you can possibly do in an equal time abroad, because you will here treat cases, and therefore remember them. Where but one can be had, we should prefer the year in hospital at home, to Europe.

Where both can be enjoyed, a year or two abroad is extremely valuable. It enables you to pursue one or more special branches farther than you can in this country. Your medical education, so far from being finished, is only begun when you get your degree. We all regard ourselves as fellow-students of a science to be followed through life.

And when that eventful hour has come that you begin your career as a doctor, what more is needed? Practice, certainly; and it will be slow to come. Earlier in the country village than in the town; earlier in the town than in the city; while in a metropolis like London, an average lifetime is two-thirds spent before the harvest season can be reached. Slow enough and hard enough anywhere; yet, if you persevere, it will come at last. But whether in your earlier and poorer, or your later and successful years, you will need something more than practice.

Medicine is not a trade, and if you make it one you will bitterly repent it. It is not a calling in which to grow rich. It can never command the enormous income of the eminent lawyer, even when the practice lies in a large and wealthy community; while the ventures and receipts of business men dwarf our year's earnings by one happy speculation, or one large sale. If you seek for wealth you have mistaken your avocation. The majority of you will earn a respectable livelihood, after from five to ten years of waiting and poverty. Add to this delay the outlay of your education, and the return for your investment will be very small.

Whatever your success, you will absolutely want something more to make your profession even tolerable to you. Bear in mind that ours is the most laborious and wearisome of callings; the slowest to rise; the easiest overthrown by ill reports; dependent on the caprice of women; subjected to the indignities of doubt and rejection by patients; full of responsibilities, which grow the faster as you ascend the social scale. The Doctor is the bearer of other people's burdens; the confidant and adviser in other people's sins and woes; the anxious watcher, whose mind is never free from a round of sick cases; the man who can never be his own master.

For years, while you still trudge on foot, you will be covered with the dust of the charlatan, who rolls by you in his chariot.

For years after you have begun to lose a little, week by week, of the buoyancy of youth, you shall be stigmatized as "such a very young man!" The older you grow, the harder you shall work; and your office-bell shall never cease to call you until your ears are closed in death. For your hands will be reserved tasks before which a scavenger would recoil. For you, other people's sufferings shall be constantly your own. Your cruel calling shall compel you secretly to watch the progress of hopeless disease, while you must sustain hope till the last. You must not only witness the sad partings of death, but on you will devolve the duty of telling friends or patients that all chance of life is past. To you, in your rides, shall come home that terrible question, after a sudden and unexpected fatal result, "could I have known more, or done more?" To you may sometimes come the harder reflections of friends, that you mistook the case. And to you it shall often happen, after success has crowned your efforts, and your patient has got well against hope, to meet with the lowest ingratitude, and to have your bill disputed in the end.

In spite of all this, the tide of students never ceases, and the profession is crowded with young doctors, year after year. What feeling calls them? What sentiment can sustain them in after life? Money is not to be largely got. Practice alone is not enough. There must be something more, and something higher.

That something is a *love of your profession*; a passion for science for its own sake; a broad humanity, which covers all the sick with a mantle of charity. Hold fast to that love and that science, if you would not sink from weariness in your earlier years, or find the fruits of success but chaff, in your old age. Never lose sight of that motive, for if it once takes flight, your profession is reduced to a trade, and there is absolutely nothing left. As long as you can keep alive the sacred flame of this early passion which first called you to embrace the medical profession, so long shall you be warmed, sustained, upheld amid disappointment, unjust treatment or reverses.

In the admirable introductory address, delivered here one year ago by the Adjunct Professor of Chemistry, many of the changes were foreshadowed which have since come to pass in this school. The key-note was struck then, which brought all the wandering strains of opinion on reform and advance in education, into one accord.

This Faculty, in listening to what they believe to be the need of the times, have adopted those changes, and made them as

thorough as they can do, now. Foreseeing that they have done so, probably, at the risk of a loss in the number of their students, for the time, at least, they cannot be accused of having taken up this new system with any expectation of individual benefit, but quite the reverse. For it cannot be too plainly stated, that this department of Harvard University is not endowed; and that a sufficient amount of receipts from the classes, to meet its current expenses, is indispensable to its existence as a medical school.

The Faculty have initiated these advances in medical education because they believe them right, and proper, and demanded. Because they, and every physician in this room, can see, that the position of our noble profession in the community of to-day is not what it should be, and not what it was fifty years ago. That there is a lower standard of respect and of knowledge creeping in; that quackeries increase; and that one Doctor is thought as good as another, because a *Degree*, in America, can be too easily acquired.

We believe that there is but one remedy. To RAISE THE STANDARD OF MEDICAL EDUCATION is the only way to recover the position which our Fathers held, and which we should retain.

AUTOPSY OF THE DOUBLE MONSTER (ISCHIOPAGUS TRIPUS) BORN IN OHIO, AND LATELY EXHIBITED IN BOSTON.

By CALVIN ELLIS, M.D. Read before the Boston Society for Medical Improvement, July 24th, 1871.

IN the *Photographic Review*, Vol. I., No. 5, Dr. R. M. Townsend has published a description of this monstrosity, in connection with an admirable photograph of the same.

As will be seen on reading this article, the *post-mortem* examination has disclosed the fact that the spines were continuous at the lower portion and united with the fully developed pelvis.

Notwithstanding the act of micturition suggested to Dr. Besse that separate bladders existed, from each of which urine escaped, but one was found, from which the single urethra passed to the common vulva.

A discrepancy exists between the article above referred to and the communication of Dr. Ainsworth, with reference to the existence of one or two umbilical cords and placentas. The question being one of fact, no opinion is expressed in the matter.

The following history of the monstrosity is communicated by Dr. F. S. Ainsworth, of Boston:—

"The facts rest upon the authority of the mother and the physician retained to attend them. They were given to me and to Dr. Fabyan, who attended the children in their last sickness.

"The mother was a robust and healthy woman, having had three children before the birth of the twins. She did not recollect the occurrence of twins in any of her family. Her pregnancy was not attended by any unusual symptoms. There was no physician present at the time of labor. The largest child came first, without more pain than usual, and began to cry as soon as the head was delivered. The time of greatest suffering was when the common abdomen was passing the soft parts. This was due to the fact that its longest diameter was at right angles to that of the vulva. After some delay, the smaller child was born, apparently lifeless. After delivery, the cries of the larger child, with the violent action of the diaphragm, gradually brought the smaller one to life. There were two placentas and two umbilical cords. The weight of both children, after birth, was 10½ lbs.

"For a few weeks the mother was able to nurse both children by bending the bodies so as to reach each breast. In a short time she was unable to do this, on account of the growth of the children, and continued to nurse the smaller child, feeding the larger one from the bottle. All the sensitive functions were entirely distinct; one child would be asleep and the other awake and playing. While one was making efforts to evacuate the bladder or rectum, the other was entirely quiet. Irritation of the skin of one was unnoticed by the other. Scratching the skin of the fused leg was felt only by the one nearest the part. The growth and nutrition of both children was about as usual."

Dr. Wm. Goodell, of Philadelphia, in the *Medical Times* for June 15th, 1871, p. 332, has given other particulars which now possess additional interest. He says:—

"This monstrosity consists of two individuals, fused together, on a common longitudinal or vertebral axis, by one pelvis common to both. Each pole of the common vertebral column terminates in a head, whilst each individual is normally developed as far as the pelvis. On one side of this appear two perfectly-formed legs, one of which belongs exclusively to Mina, the other to Minnie—a fact proved by tickling each foot alternately. Between these limbs

are situated one anus and one set of the external genital organs of a female. On the opposite side of the pelvis projects a rudimentary limb, made up of lateral halves, contributed equally by each individual. It contains a broad femur deeply furrowed in the median line, two tibiæ and two fibulæ, and ends in a foot furnished with two calcanea, two big toes, and six little ones. This fused or siren limb is so twisted on its axis that its heels look upward—while the children are lying on their backs—conveying the impression that the half of this limb nearer to the one child belongs to the other child. The vascular and nervous systems of each individual are independent and distinct. Thus, the pulse in one beats faster than that of the other; one—as you observe—is now asleep and motionless, while the other is awake and playfully tossing about its arms and leg. One of these children is weak and puny, the other healthy and active. A few weeks ago, a change of milk at Columbus, Ohio, disagreed with Minnie, who became quite sick with a diarrhœa, while Mina, being more robust, remained as well as usual. It was now noticed that green and liquid stools alternated with those of a feculent character. Ordinarily, the act of defecation in the one child seems to excite peristaltic movements in the bowels of the other, as shown by two copious evacuations in quick succession. These facts lead me to think that each individual is provided with its own alimentary canal, which unites with its fellow to form one common rectum. They also have probably but one bladder between them. Thus, separated by brain and intelligence, and distinct individuals as regards the more vital organs, they yet share in common the more degraded apparatuses of animal life."

Dr. G. J. Fisher, of Sing Sing, N. Y., in the same Journal for July 15th, 1871, page 376, published an article upon the same subject, the greater part of which we reprint.

"In my systematic essay upon Diploteratology, which for want of leisure still remains unfinished (two hundred pages of text and thirty-three lithographic plates, containing one hundred and twenty-six figures, is all that has thus far been published), I have described sixteen cases which belong to the same generic group as the Ohio case—viz., *Ischiopagus*. The group is divided into the complete or symmetrical and the incomplete or non-symmetrical forms. The symmetrical ischiopagus is characterized by the union of two entire fœtuses in such a manner that their pelves form a common ring or basin, the right pubic bone of one individual forming a junction with the left of the other, and *vice versa* on the opposite side. The common axis of the symphyses pubis is at right angles to the common vertebral axis. The heads are situated at the distal extremities of the longitudinal axis of the compound body; the abdomens are fused; single umbilicus and funis; one bladder; two rectums; two sets of genitals; four pectoral and four pelvic extremities; vital organs normal and independent.

"I have given details of eight cases (*Trans. Med. Soc. of the State of New York*, 1866, p. 242 *et seq.*) of symmetrical ischiopagi, differing from the Ohio case only in having four legs instead of three—viz., Cases 25, 26, 27, 28, 29, 31, 32, 33 and 34. Dr. Goodell's *eighth* case, of which he was informed by Prof. Leidy, is the same as my Case No. 25, taken from Dr. Montgomery's article 'On Double Monsters' (*Dublin Quarterly Jour. of Med. Sci.* vol. xv., 1853, p. 263, pl. 1, fig. 2). Dr. M. states, in concluding his account of the case, 'I may observe that this case is taken by Prof. Vrolik as the type of a class, "Inferior Duplicity," and the figure of it in my article "Fœtus," in the *Cyclopœdia of Anatomy and Physiology*, vol. ii., fig. 146, is referred to by him as an illustration.' In describing the skeleton, he refers to the Catalogue of the Museum of the Royal College of Surgeons of Ireland, vol. i., p. 148. Thus it appears that Dr. Goodell's eighth case will be found in my essay, and is one of the eight cases of *four-legged* ischiopagous children therein described.

"The non-symmetrical forms of ischiopagus are divided into specific groups according to the development of the pelvic extremities. Those having three legs, one of which is always a compound limb, resulting from the fusion of two, are described under the title of *Ischiopagus tripus*; of this form I have given details of *four* cases—viz., 35 to 38.

"Dr. Goodell's *fifth* case, for which he refers to the works of Ambrose Paré, will be found cited in the *N. Y. State Med. Transactions*, p. 262, under the head of 'Literature of Ischiopagus' (A. Paré, *Les Œuvres*, Paris, 1575, fol., p. 809). The bibliography of this group, notwithstanding the titles are as much abbreviated as possible, occupies the greater part of this page.

"The *sixth* case referred to by Dr. Goodell, of which he says a wood-cut is given by Aldrovandus (*Monstrorum Historia*, Bononiæ, 1642, p. 646), is copied from a wood-

cut in Lycosthenes (*Prodigiorum ac Ostentorum Chronicon*, &c., Basileæ, 1557, p. 619). It is also copied by Licetus (*De Monstris*, 3d edition, Amsterdam, 1665, p. 113). I have translated a brief account of it, which will be found under Case 38 (p. 254 of *Transactions*), being one of the *four* cases with which Dr. G. credits me.

"As far as my knowledge extends, the Ohio case is the only one of *Ischiopagus tripus* which has ever occurred on the continent of America, which fact renders it peculiarly interesting.

"There is a form of non-symmetrical ischiopagus in which two legs only are developed, both being on the same side of the double body—of course, anatomically. Each individual has one pelvic extremity, the single rectum, urethra, bladder, and genitals being joint stock, each member of the dual corporation having furnished fifty per cent. of the material in the organization of the company. This form I have designated *Ischiopagus dipus*, and I have described two cases of it—viz. 39 and 40.

"There is still another form, in which but one individual is fully developed, to the pelvis of which either a pair of legs, or a single fused leg, with double genitals, are attached. This form is denominated *Ischiopagus dipygus*, of which I have given two cases—one human (Case 41), and one animal (Case 42).

"Since the publication of that part of my essay relating to the generic group Ischiopagus, I have had an opportunity of making a personal inspection of a case of the kind, in a human female infant several months old, born in Millville, Tenn., and exhibited in New York city in 1868. Two well-developed additional lower limbs were attached to the pelvis of the child. Between the natural limb and the supernumerary one, on either side, were to be seen well-developed female genitals. I saw it urinate from both sides, beginning and ending at the same instant. There was but one anus and one bladder.

"This case has been published in many medical journals, among which I will mention *The Richmond and Louisville Medical Journal*, July 1868, *The Cincinnati Medical Repertory*, July 1868, p. 202, and *New York Medical Journal*, October, 1868, vol. viii. p. 102.

"The *seventh* case of ischiopagus, pointed out by Dr. Stillé, has escaped my notice. I have not seen an account of it in any of the numerous works which I have consulted, and therefore cannot feel warranted in placing it with the three-legged group before seeing either a figure or a description of it.

"The case pointed out by Prof. Leidy, in the 'Pathological Anatomy' of Rokitansky, may be a mere *typical* form, selected from either of the authorities above cited; and since Dr. Goodell says Prof. Rokitansky 'does not state where it occurred,' this would seem the most probable view of the case, corresponding with the Irish case, belonging to the Dublin College, selected by Prof. Vrolik as a typical form in his article 'Double Monsters' in the 'Cyclopædia of Anatomy and Physiology,' and which Drs. Leidy and Goodell have both been misled in regarding as an additional case to those described in my work.

"The greatest care is required in all bibliographical and statistical investigations relating to medical subjects, and especially when a period of several centuries is to be explored, in order that the same statement, case, or figure referred to or repeated in different works may not be mistaken for so many different cases. Having had some experience and much perplexity in this sort of work, and on this very subject, for many years past, I have written this note to assist all who are interested in obtaining the correct literature of this form of malformation."

Dr. Ainsworth also furnishes the following account of the fatal illness of the children:—

"While on exhibition in New Jersey, the larger child suffered an attack of cholera infantum, the smaller one remaining in perfect health. At this time the characteristic evacuation from the bowels of the sick child would be followed by a healthy one from the other, who was lively and playful. After recovery, and while on their way to Boston, the small child was taken with the same disease, which continued growing worse for four days, when it died at 2, P.M. At about 8 o'clock on that day, the other, which had appeared well in every respect, began to show signs of uneasiness, failed rapidly, and it died about three hours after the other. While struggling in death, the increased action of the diaphragm seemed to partially resuscitate the dead child, so as to occasion feeble respiration and action of the heart, with opening of the eyes and gasping for breath. This lasted for a few minutes, and ceased at the death of the large child."

About twenty-four hours after death a cast was taken, and the body was injected with a preservative solution by Drs. F. S. Ainsworth and C. B. Porter.

Autopsy, thirty-eight hours after death.—Dr. Ainsworth made accurate measurements of every part, but, being obliged to leave, the examination was conducted by Dr. C. Ellis, with the assistance of Drs. C. B. Porter, H. H. A. Beach, and R. H. Fitz. There was *talipes varus* of the right foot. The length of the bodies, from vertex to vertex, was twenty-nine inches. The fused leg measured, from trochanter to malleolus, eight and one-half inches; around the thigh, eight and one-half inches. The leg corresponding with the smallest child, was smaller than the other.

No proper *umbilicus* was seen, but, in the position of this, was a kind of superficial cicatrix an inch or more in diameter. This appearance was connected with an attack of erysipelatous inflammation of the part soon after birth, followed by sloughing. Both *aortas* were found in the usual position, and the preservative fluid passed very readily from the aorta of the largest child into all the vessels of the smaller.

The *round ligament* was in its usual position in each liver, but the vessels soon subdivided, and could not be traced as far as the umbilical region, or, if so, the branches were exceedingly small, and spread out in a fan-shaped expansion of peritoneum. The *lungs* were more sub-divided than usual, and on the free edges were several auricular appendages. The *thoracic organs* were, in other respects, normal. The *livers* presented a number of supplementary lobules and fissures, but were of the usual size. The *spleens* occupied their normal positions in each child, and were, in every respect, normal.

In the small child instead of the layers of peritoneum, which extend downwards to form the anterior layers of the *great omentum*, there was a fold attached to the large curvature of the stomach, but half an inch broad. In the large child this fold extended to the colon, as is usual, and formed below a free, thin layer, which represented the great omentum. The *stomachs* were in their usual positions, but both were so affected by cadaveric softening, that they were torn in their removal, though handled with ordinary care.

FIG. 1.

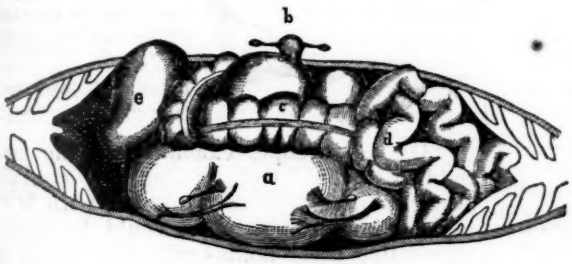

FIG. 1.—View of the abdominal cyst, with ovaries and Fallopian tubes attached. *a*, the cyst; *b*, the normally developed uterus and ovaries; *c*, the common large intestine crossing the cyst; *d*, the small intestines; *e*, the stomach; *f*, the liver of one of the children.

The *small intestines* were fused at a point twenty-five inches above the ileo-cœcal valve, that of the smaller child being considerably constricted for a short distance from the junction. The commencement of the fused portion formed a conical sac, with the base and sides an inch and a half in length. The *two mesenteries* of the individual small intestines continued separately over the common portion. The intestine of the larger child measured, from the pylorus to the common portion, thirteen feet three inches; that of the smaller child, seven feet ten inches. There was *one large intestine* twenty-five inches long, apparently the result of the fusion of two, as there were two appendices cœci and four longitudinal bands, each pair terminating in the appendices. Each vermiform appendix had a distinct peritoneal fold.

The *kidneys*, larger than those usually seen in a nine months child, lay upon the side of the common spine, corresponding with the perfect lower extremities. This arrangement gave a left kidney to the larger child, and a right to the smaller, which was also shown by the examination of the organs themselves.

Upon the same side was a well-formed *bladder*, four inches in length and two in breadth; from the fundus of this a urachus extended upwards towards the umbilicus. The *hypogastric arteries* were in their usual position. Behind this was a *uterus*, an inch long long and half an inch broad at the fundus, with perfectly normal appendages. Fallopian tubes two inches long. Left ovary one inch; right, three-fourths of an inch in length.

Lying beneath the intestine, and attached to the posterior wall of the abdomen, was a somewhat *conical cyst* (Fig. 1*a), with

* From a drawing made Dr. R. H. Fitz.

quite an irregular outline, owing to the sacculation of various parts. The broadest portion, towards the fused limbs, filled the space between the cartilages of the ribs, while the opposite side was only two-thirds as large. It weighed, with its contents, 3 lbs. 6 oz. avoir., and contained about two pints of opaque liquid, in which were floating soft, white masses, or flocculi, composed of epithelium. On raising the free portion towards the fused limbs, there were seen two well-developed ovaries, three-fourths of an inch in length, attached to wall of the sac by ovarian ligaments; also two Fallopian tubes.

Fig. 2.

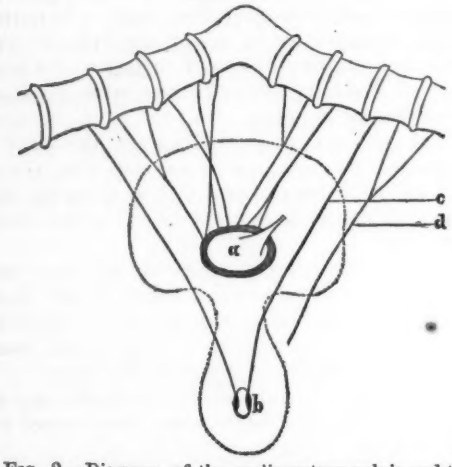

Fig. 2.—Diagram of the rudimentary pelvis and the nerves proceeding to it. *a*, the upper of the two cysts found in the rudimentary pelvic cavity; *b*, the obturator foramina; *c*, the obturator nerve; *d*, the crural nerve.

A careful dissection of the cyst from the tissues which bound it to the posterior wall, showed a *second cyst* (Fig. 2, *a*, and Fig. 3, *b*) lying in and projecting from a small cavity formed by bones which resembled the ossa innominata of the fused limb. This was connected with the large sac by a firm, white cord, from two-thirds of an inch to an inch in length and half a line in diameter. This gradually tapered towards the upper extremity. In the lower portion there still remained a narrow canal, as was shown by the escape of a drop of clear fluid after incision. The small sac was carefully dissected from the pelvis, with what appeared to be a mass of fat; but after removing the latter a *third cyst* was found (Fig. 3, *a*), the contents of which could be forced into the second through a very narrow canal. The uppermost of these cysts was, perhaps, half an inch in length, the lower somewhat larger.

Attached to, or rather imbedded in, the posterior wall of the largest cyst first described, near the crest of the ossa innominata of the fused limb, were two somewhat *oval, reddish bodies*, the largest seven-eighths of an inch in length, the smallest five-eighths.

This series of sacs and the small, firm, reddish nodules resembled nothing in the fully developed body, but probably represented certain organs, the development of which was arrested or in some way perverted. If we revert to the well-developed organs about which there can be no doubt, we find two complete sets of thoracic organs, two livers, two spleens, two stomachs, two small intestines fused below, and one large intestine presenting some features belonging to two; also one complete set of pelvic organs, and on the opposite side two ovaries and two Fallopian tubes. To complete the double series, we need two kidneys, a bladder and a uterus. A thorough examination of these doubtful formations, by Dr. R. H. Fitz, gave the following results:—

Fig. 3.

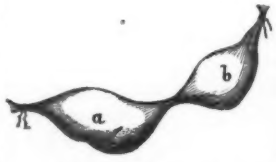

Fig. 3.—View of the cysts found in the rudimentary pelvis. *a*, the lower cyst, containing sebaceous matter; *b*, the upper cyst, filled with clear fluid.

"On microscopic examination, the two reddish bodies were found to contain straight and convoluted tubules, with Malpighian bodies. No duct could be found connecting these bodies with the cavity of the cyst. The inner surface of the *large sac* was mostly smooth and serous in appearance, with many reticulated fibres visible beneath the surface. Some portions of this were covered with an opaque, white, wrinkled, almost nacreous-looking coat. This was easily detached, friable, and left a smooth surface when raised. This consisted of epithelium, varying in character between the tesselated and moderately cylindrical forms. Projecting from the inner surface was a conical body, about one-fourth of an inch in length and perhaps a line in diameter, terminating in a red, rounded extremity as large as a mustard seed. The base of this corresponded with the termination of the white cord previously described, which connected this large cyst with the other smaller ones. The surface around it had a peculiar reticulated appearance over an area two inches square. This was due to the presence of a number of pouches, with free circular openings from two to four lines

in diameter. On passing a probe into these the parietes were found to extend laterally in the walls of the sac for a considerable distance, in several instances at least half an inch. In the immediate neighborhood of the open pouches were found three or four round yellow patches, rather smaller than the head of a pin. Pressure being applied, a yellow semi-solid substance was set free, which was made up of numerous nuclei of the size of white blood corpuscles, and large cells often of the size of mucous corpuscles. The largest of these, though still containing an apparently normal nucleus, were quite homogeneous and translucent. The nuclei were faintly granular. These were contained in pouches, smaller, but otherwise similar to those previously mentioned. The wall of the large sac contained spindle-shaped muscular elements.

This large sac was probably the bladder, judging from the character of the epithelium, and the presence of muscular elements. The pouches corresponding in position with the racemose glands at the neck of the bladder, were apparently due to retained secretion."

The correctness of the conclusion arrived at by Dr. Fitz, is shown by the following chemical examination of the contents of the cyst, by Dr. E. S. Wood. He says: "The clear fluid was of a light straw color. *S. G.* 1.014. *Reaction* acid to test paper. *Sediment* very abundant, dense, white in color, and consisting of epithelium. *Albumen* was present in considerable amount, the coagulum formed by heat occupying about one-eighth of the bulk of the liquid tested. *Chlorides* and *Phosphates* were present in about the same proportions as in normal urine. *Sulphates* were present in less proportion than in normal urine. Concentrated Sulphuric and Hydrochloric acids produced the same colors as when re-acting upon the same amount of urine in which *Urophaein* and *Uroxanthin* are slightly diminished. Well defined crystals of *Uric Acid* were obtained after concentrating the fluid and applying the appropriate tests. These crystals responded to the murexide test. From another portion of the concentrated fluid were obtained crystals of *Nitrate of Urea*, after the addition of Nitric Acid. Thus all the constituents of normal urine were present, as well as epithelium in abnormal amount, and albumen."

In regard to the two other cysts, Dr. Fitz makes the following statements.

"The smaller one contained a clear watery fluid. Its inner surface was covered with a delicate tesselated ephithelium. The other contained a white opaque semi-solid material, made up of fat epithelium. The wall of this was formed of true skin, which bore numerous delicate hairs half an inch or more in length. By the exercise of considerable pressure the sebaceous material could be forced into the smaller cyst through a narrow canal lying between the two." He concludes, therefore, "that the *smaller* sac is probably the uterus converted into a serous cyst by the retention of its secretion; the sebaceous cyst is probably the vagina, which, genetically, is nothing more than inverted skin."

The result of Dr. Wood's chemical examination is as follows. "The small sac contained about ℥ss. of a clear and colorless fluid, which was slightly acid. Spontaneous evaporation of a portion, left, as the only residue, a number of crystals of Chloride of Sodium. No other substance could be detected by re-agents."

Taking into consideration all the above data, we are justified in saying that there existed representatives of the missing organs, either undeveloped or in some way modified.

The spines were curved as they approached each other, and fused at the first sacral vertebra which was broad and curved. The limb formed by the fusion of two, was attached to the body by muscles only.

Large nerves extended from both spinal columns into the rudimentary pelvis and to other parts. Fig. 2, *b* and *c*.

No more complete examination of the skeleton could be made, as the body was removed.

Selected Papers.

THE RELATIONS OF THE MEDICAL PROFESSION TO MODERN EDUCATION.

By Edward S. Dunster, M.D., New York.

It is apparent, then, that the medical profession, although trained for a specific occupation, must have a scientific education, and we have above seen that the tendency of modern education is in the same direction. "Scientific education," says Mr. Mill,* "apart from professional objects, is but a preparation for judging rightly of man, his interests and requirements." Now, if this assertion may be accepted as a postu-

* Inaugural Address at the University of St. Andrews, February 1, 1867.

late (and no one, I believe, can justly take exception to it), it forms a strong point in our argument, that the physician must take control of the coming education; for his culture, and his alone, enables him to judge rightly of man, his interests and requirements. This is his peculiar office, the highest and most ennobling of his duties, and, in the use of the term education, we have expressly extended its application to the broadest limits, and have excluded its subordinate and narrow features. * * * *

Hitherto the medical profession has had but an indirect influence in education, but that influence, by the constant perfecting of their own studies, and the supplying of an essential knowledge, has undoubtedly contributed to the change which is now taking place in our educational systems. The state of things, to which they have thus indirectly contributed, now invites their direct guidance and control. It may be objected that the education demanded of the profession themselves in this country falls far short of the high requirements which have thus been set upon their office. Science and civilization it is said are advancing, and yet you demand but a little more culture in medicine than when its alliance with science had not been established. There is some truth in this objection, and it is deplorable that it should be true, as well as humiliating to make the confession. But this does not invalidate the force of the argument, which is based not on the *degree* but the *direction* of the culture. And besides, this is an evil which will rectify itself in due time. The exigencies which called for the establishment of medical schools in this country, allowed a very low degree of culture, and demanded very inferior qualifications on the part of the student. The influence of this state of things has been perpetuated, and is to-day evidenced in the manifestly-inadequate requirements for entrance into the profession.* Our thinking men have long been convinced of the necessity of reform, and this conviction is spreading over the minds of the entire profession; and it is no prophecy to assert that the day is not far distant when the standard of qualification must be raised and made to accord more closely with the important responsibilities of the office. The corrective must be applied in two ways: 1. By demanding a high scientific education before admitting the student to the study of medicine proper; and 2. By lengthening the time of that study, and taking up the separate branches in their natural and progressive order. The present system of medical teaching is more senseless even than superficial; but we may confidently expect, in view of the progressive spirit of the age, that we shall yet establish a more reasonable and adequate curriculum of medical studies. * * *

More than two centuries ago, Descartes, one of Europe's keenest thinkers, said:—"If it be possible to perfect mankind, the means of doing so will be found in the medical sciences." With a far-reaching prescience, he anticipated the influence with these sciences, then in a crude, almost chaotic condition, would inevitably exert. We, to-day, have only to look around us, to see this influence manifested in a thousand different ways and directions. And, although we are yet far from perfection, and may never reach it, it cannot be denied that the influence of these sciences is tending toward that end, toward man's improvement, mental, moral, and physical—the most ennobling duty and privilege, perhaps, of the new education.

* "The great evil of modern medical education," said the late Prof. Syme, in the concluding lecture of his course on Clinical Surgery, delivered at the Royal Infirmary of Edinburgh in 1867-'68, "is, that it has become a preparation not for discharging the duties of a profession, but merely for passing examinations which, for the most part, imply neither an accurate knowledge of facts nor the possession of sound principles, being simply affairs of memory loaded with dry terminology, to be thrown overboard at the earliest opportunity."

When so candid a confession as this comes from a representative man like Syme, and from a country where the requirements for entry into the profession are confessedly far higher than with us, we may well blush for the average standard of our own medical attainments. But my faith is firm and abiding that the time will come when this manifest evil will be corrected, and when it will no longer be possible, without fear of contradiction, to fling squarely in our faces such a bitter taunt—all the more bitter because true—as that uttered by Prof. Eliot, now President of Harvard, in his article on the new education, *Atlantic Monthly*, February and March, 1869.

CONDITION AND PROSPECTS OF THE MEDICAL PROFESSION.

By JOHN WARE, M.D., late Hersey Professor of Theory and Practice in Harvard University.

IT will occur, perhaps, to some, that by requiring a higher education, we are rendering entrance to medical life more difficult, and putting out of the power of many persons of limited acquirements and narrow means, to gratify the ambition, so common among us, of enrolling themselves in the ranks of a profession. This is true. It *will* be made more difficult to become a physician. But is it not now too easy? It will diminish the number of those who become physicians; but is not the number now too great? I put it to the good sense

of this audience, whether this objection has any weight. Is it any advantage to the profession, or to the community, that entrance into it should be so easy? Should the prizes of life be made so easy? Do we not thus undervalue our calling? Is not the standard of professional character, as well as of acquirement, lowered by this facility of attaining its honors? Is not our profession injured, not merely as it regards the honest worldly reward of its laborers, which no man ought to pretend to despise, but is not its duty to the community imperfectly performed as a consequence?

It is, to be sure, popular to talk of making education cheap, and of making the avenues to honor and profit open freely to all. . . . But when we come to the education of men for particular stations in society, the case is very different. Even then, let the education be made as cheap and easy as it can be; but not cheap and easy by making it poor. Do not let us deluge the community with a flood of half-learned professional men, who drudge heavily through life, half-employed, half-paid, half-starved, far less respectable in their vocation than a substantial farmer, an honest trader, or a skilful mechanic, because we choose to be blinded by a falsely so-called republican maxim, which it may answer very well to bandy about at a political caucus, but which should never pass current with those whose aim is the true respectability of their profession, and the real good of the community.

But in order that we should deserve and perpetuate the confidence of mankind, not only is it necessary that those who are to enter the profession should be highly educated; it is also necessary, that we, who compose it, should exhibit to the world a spirit of improvement and progress—a disposition to employ faithfully all the means we now possess in the practice of our art—and that, free from a primary regard to personal emolument and reputation, we should be ready to examine with a fair and candid spirit, all and any suggestions, however they may arise, and from whatsoever quarter they may come, which hold out a fair promise of increasing those means.

"INSPIRE yourselves to perform with zeal and honor its duties, by taking first of all a just view of its dignity and usefulness. * * * * No man can do well any work unless he does it from high motives and with a lofty spirit. No man can adorn a profession until he first honors it by feeling that it honors him."—*Rev. Thomas Hill, D.D.*, 1865.

Medical and Surgical Journal.

BOSTON: THURSDAY, OCTOBER 5, 1871.

THE AIM OF THE TRUE PHYSICIAN.

ONCE again the Editor of this JOURNAL steps aside from the beaten track, the weekly routine of professional journalism, to extend the hand of fellowship to you who are about entering medical life. This we do the more readily, both for our own sakes and for the profession, in order that we may assure you of the kindly feeling which we entertain for the coming medical man; and that we may have the opportunity of placing before you incentives to that excellence of professional character which shall make you the peers of the worthiest of the fraternity. We are confident that the medical profession, than which none is more honored or more honorable, will gladly welcome you to its ranks, so long as the position you maintain is a worthy one.

With the present year the students of the Harvard Medical School have had offered them opportunities for study and improvement of a character never excelled in this country. What these privileges are you have already learned from the Announcement made by the Faculty.

In order that you may retain a vivid recollection of the wisest method of using these opportunities—in fact, how best to study medicine—you have now before you once more the excellent address of Dr. Cheever. Its suggestions, we are sure, will take a deeper hold on your minds by re-perusal. Not less important is the advice given in the extracts which we have made from the writings of various members of the profession; they will give you right views of medical life and an elevated conception of the position which the true Christian physician should aim to reach. The practical compendium of information in the subsequent portion of the JOURNAL will be valuable, containing, as it does, a statement of the clinical and professional advantages which Boston offers for your studies.

What, now, are some of the cardinal points which shall aid you to attain a position, earnestly to be desired by every conscientious man—that of the true physician? We give you three. First, *be true men;* determine to be honest and true members of society, and to *deserve* the appreciation of your fellow-citizens. Then *be honest and faithful members of the profession;* have a just and wise recognition of its honor, and resolve to maintain it. Finally, *be earnest and diligent in your work,* not only during your

student days, but so long as life is given you to work for your fellow-men in the calling you have assumed.

First, we trust that you offer yourselves for the medical life with the determination that you will be true and faithful to the community, as *men*. We cannot look in all cases for eminent talent, for liberal culture or social advantages; but we *can* demand that you enter professional life with a resolve to do your duty honestly by your fellow men, that your stand in the community shall be a good one, that you will constantly seek to elevate yourselves, and so help to improve those around you. We do not ask you to neglect the matters of common interest in the community; rather, as true men, you will be expected to take such part in all that makes up the public weal, in the educational and charitable institutions of the day, in political, religious and social interests, as shall make you *good citizens*. But, in your intercourse with members of the profession or with the public, scorn to use these means as a trick to secure practice; wherever you are, maintain your dignity, and do not creep or fawn, as sycophants, when you may walk as men. We only ask you, whatever may be your station in life, to be *on the right side*—the side of honesty and truth—and, by your character, show yourselves worthy citizens in the circle in which you are placed.

Secondly, we beg you to remember that the profession of medicine is an honorable one. In all past history the men most respected in medicine, those in our own midst who are held in the highest esteem to-day, are those who have held the honor of the profession as a sacred trust; and who have refused, at all times, to prostitute to private or party ends the calling to which they have given their lives. So long as you maintain your own dignity and the honor of the profession you will have the respect of your brethren as well as that of the world. When dignity and honor are lost, you will quickly sink in your own and the public estimation. Let the years in which you are waiting for patients be passed in improving your minds and strengthening your hearts; in carrying out professional or scientific investigations; in assisting your elders in the profession; in working for the poor. Join your brethren in their societies, contribute to the literature and knowledge of medicine by giving your thoughts or experience on subjects which may interest you, take part in every good object in which the profession is engaged; but *never be idle*.

To attain true success in any field of life, you must call to mind that earnest, unremitting *work* is demanded; without this no personal or professional advance is possible; without this you will fail to place yourselves in positions of honor, or to add anything to the profession. There are places of honor and trust waiting for each one of you; there are duties to be performed, the sick and suffering to be relieved—there is room for every faithful worker. Let the scalpel and the test-tube, the lecture, the recitation and the practical exercises, hard study and friendly discussion on professional topics, be the instruments in your hands in these early years, and let them be faithfully used, the better to fit you for active, strenuous work as the years give you opportunity to prove your powers.

Do not be discouraged at early want of success; do not cease to work because you see places of honor and usefulness already filled by your seniors; they will readily and cheerfully bid you come on and take the places *if you can*; and the talent, the energy, the faithfulness you manifest will receive a ready recognition from your brethren and the community at large: but only in proportion as your knowledge and attainments are *real* and such as are reached by actual worth, will be your thorough and final success.

Thus, fellow-students, by maintaining your character for true manliness—by upholding the dignity of your class—and by putting your hand earnestly and persistently to the peculiar work which God has assigned you in the line of duty, you cannot fail to secure that elevated rank in the scale of being so truly worthy of your ambition and effort, a place among the respected, honored and beloved of our profession.

THE TEACHER TO THE STUDENT.

"The hygienic safety of the public lies in the sound and thorough education of the medical student; in the adequate support of medical schools; in seeing to it, that the best institutions of medical learning, each in its own community, shall be so far well nourished that they shall not dwindle and degenerate; but that they shall possess the vigor without which they cannot hold their way with the onward march of solid knowledge.

"The question to the public is, will you admit within your confidence, to navigate the household ship in time of peril, responsible to no one but himself, with no eye of scrutiny upon him, one who not knowing what the exact nature of the danger is, seeks to engross equally your mind and his own, by a routine of incessant effort, putting the helm first up, then down, and so compelling the good ship to struggle at once against the tempest and an officious, or, to say the least, a futile interference? Or will you rather rely upon one who undertakes to know, first, all that can be known, of the conditions of disease; and who then endeavors to discriminate among remedial measures, which are of sure, which are of probable, and which only are of possible

salutary influence? The broad foundations of this ample structure must be laid, at an early period of life, in a sound medical education."—*H. J. Bigelow, M.D.*, 1859.

"There is one obligation, which is implied by the language of your diploma, and the spirit of your profession, which I wish not to leave unnoticed. Perhaps I shall come the nearest to my meaning, if I call it courage. You are to be brave men; brave, in the highest and noblest sense; brave, morally and physically. And I thank God, that however else the profession to which I belong may have failed; however derelict any or all of them may have been, in other matters, in this respect they have been loyal and true. You must go a great way to find a physician who shrinks from his professional duty, however unremunerative, disgusting, dangerous, or appalling it may be. To this high ideal, your diploma, the standard of your profession, calls you to be loyal. Wherever sickness shows its most terrible form; where disease riots; where contagion and pestilence stalk abroad, there is your post. Death, whatever mask he wears, is to have no terror for you. I do not mean that you are to court opportunities of danger; but that you are never to shrink from any professional duty. No human being can be so degraded, or cursed with a disease so loathsome or fearful, that you can ever refuse to administer to him the succors of medical art. And if your selected post of duty, where you hold yourselves in readiness to act as high priests of the sacred art of healing, is ever visited by pestilence, or by unknown and terrible forms of disease, all others may flee from it, but you must remain, even though it be at the sacrifice of your lives. If you die then, you will die bravely in your harness, amidst the sick and dying you are ministering to. You may die, but you have no right to desert—to preserve an ignoble life by flight."—*E. H. Clarke, M.D.*, 1860.

"But the work of observation is a hard work. Some of you will be acute observers from the start, and some of you may be very dull; but the observing powers of the best may be improved, and the apparently dullest man of all may astonish his friends by the keenness of cultivated powers. Still, it is only by labor, and properly directed labor, such as medical schools intend to supervise, that the end is to be accomplished. In the words of one whom I hoped to see among us to-day, and whom as a boy I listened to at Cambridge, 'Difficulty, struggle, progress—this is the law.'"—*Charles E. Buckingham, M.D.*, 1868.

"Adopting the motto of the Imperial Society of Surgery, *Vérité dans la Science, Moralité dans l'Art*, 'Truth in Science, Conscientiousness in Practice,' fitting yourselves for a vocation in which it shall be your aim to do the most good and the least harm, let your conduct as students illustrate the dignity of your chosen profession. Dependent on no traditions or popular belief for its authority, the efficiency of its followers can claim nothing from mere shrewdness or borrowed accomplishments. It demands of them unsullied honesty and unreserved self-sacrifice—offering in return a range for the highest intellectual effort, for the exercise of wisdom, prudence and judgment, and for the cultivation of that greatest and rarest as well as most comprehensive of all the virtues, *Charity*."—*R. M. Hodges, M.D.*, 1869.

"But I need not tell you that something more than this is necessary, and more necessary in our profession than in the study of any other; that is hard and honest work. Work which, beginning with this hour for some of you, is to continue for you all as long as you claim the title of student or doctor of medicine. There can be no end, no interruption. You have come here to learn medicine, but in the three years nominally assigned to that object we can teach you almost nothing of its past history, but a part of what you should know of what is at present known, so much only as will enable you to go on with ourselves with the study of that of the future. You will learn that in those branches in which science is making the greatest advances the least is positively known, that the results of recent investigations in pathology, physiology and chemistry are as startling as was the discovery of the circulation in its day, and that each new revelation shows only more clearly how ill-founded is much of what we have hitherto treasured as fixed knowledge, and how much remains to be known.

"You have entered, then, upon the study of a science always changing, to be ever new Our posterity will never exhaust, never complete it. Your work, therefore, is of two kinds—to study the labors of other men in their relation to those of the past, and to learn to observe and investigate for yourselves. Now you will never advance far in either course without this work in its strictest and hardest sense. Call it 'digging,' labor, or what you will, you cannot shirk it or avoid it in any way. It is before every one of you, whose humblest ambition it is to make himself a thorough, self-respected physician, in its naked and unpleasing reality, as your inevitable lot, as long as your mental and physical powers hold out. As long as the science of medicine progresses you must advance with it; the moment you drop the oars, you are far back in dead water."—*J. C. White, M.D.*, 1870.

"The same qualities and habits which are requisite to make a successful merchant, are needed to secure the success of a medical practitioner. The doctor may not, indeed, get his success by the same measures. Modes of advertising which would be proper for a merchant, are not available by the honorable physician, but prudence, industry, perseverance and common sense are required alike of all men who would succeed in any undertaking. * * * * Accident may determine the field of operation and the duration of the struggle, but the man who has success in him will win in spite of all obstacles, while no bolstering nor outside influence of any kind whatever can sustain one who is himself lacking in essential qualities."—*T. A. McGraw, M.D.*, 1871.

Practical Information.

HARVARD UNIVERSITY.

The Medical School, North Grove Street. Most of the information desired by the student is given in the Annual Announcement issued by the Faculty of the School; a few items are repeated for ready reference, and for the use of physicians who have expressed a desire to attend certain of the lectures and other exercises.

The course of study commences on the last Thursday (28th) of September and ends on commencement day, the last Wednesday in June (26th). It will be divided into two equal terms, with a recess of one week between them.

In future, instruction will be given by lectures, recitations, clinical teaching and laboratory exercises in such a manner as to carry the student progressively and systematically from one subject to another in a just and rational order. The students, who enter the school this year or in the future, will be arranged in three classes according to their time of study and proficiency.

Students will be allowed to pass from a lower to a higher class or to join an advanced class only on passing a satisfactory examination in the studies already pursued by the class which they desire to join. Students may be admitted to the school and become candidates for a degree without joining the regular classes, pursuing their studies in such order as may be advised. Such students may pass the required examinations either one subject at a time, several subjects at a time, or all the subjects at once, but only at the stated seasons of examination.

The *studies* in the regular course will be thus divided :—

First year.—Anatomy, Physiology and General Chemistry.

Second year.—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

Third year.—Pathological Anatomy, Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery. All the subjects of the whole three years' course will be taught every year, so that a student who is unable to remain in the school three years or two, may nevertheless in any one year get the benefit of all the instruction given in any of the subjects. Any student of the school may obtain, without an examination, a certificate, which will be evidence of attendance upon lectures or time spent in study.

Instead of the former hasty, oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of *examinations* on all the main subjects of medical instruction has been arranged. The regular examinations will be held in the following order :—

At the end of the first year : Anatomy, Physiology and General Chemistry.

At the end of the second year : Medical Chemistry, Materia Medica and Pathological Anatomy.

At the end of the third year : Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery. The regular examinations will be held at the end of each year in June, but others will also be held a week before the opening of the school in September, and at the close of the first term in February. In 1871–72 examinations will begin September 25, February 12 and June 19.

The following are the *requirements for a degree.* Every candidate must be twenty-one years of age and of good moral character; must give evidence of having studied medicine three full years; have spent at least one continuous year at this school; have presented a satisfactory thesis; and have passed the required examinations.

Fees, for Matriculation, $5.00; for a year, $200.00; for either term, $120.00; for graduation, $30.00. Use of Library and attendance on Hospitals and Dispensary, free.

This method of instruction, examination and the conferring of degrees will go into operation on Sept. 28th, 1871, but the changes above described will not affect students who entered the school previous to the above date, unless by their choice. Medical commencement will occur about the middle of February for those who adhere to the old method.

Other information regarding the School will be given by the Dean, Dr. Calvin Ellis, at the Medical College.

The Dental School corresponds in the times and in many of the lectures to those of the Medical School. The dental students have the privilege of attending the lectures and other exercises of the Medical Department.

The Dental School enters upon its fourth winter of instruction with greatly increased facilities. Extensive changes have been made in the medical department, which include more systematic and thorough arrangement of studies, lectures and practical work, of a character which has received the highest commendation of medical men; in these and in the special improvements made in the dental course the students of the school participate during the term.

The exercises of the school are held in the house No. 50 Allen Street, which is fitted up especially for its use.

For the accommodation of the mechanical department an excellent laboratory has been prepared, with room for from forty to fifty students, each having his own drawer with its lock and key. Ample arrangements have also been made for the full demonstration of the manufacture of mineral teeth.

On the same floor is a Lecture-room, capable of seating from seventy to eighty students.

The operative department, as heretofore, will be located in the Out-patient rooms of the Massachusetts General Hospital.

This School offers superior advantages, in that, while the instruction will be no less thorough in those departments peculiar to dentistry, it gives the student unusual facilities for the study of

Anatomy, Physiology, Surgery and Chemistry, as the dental student pursues the same course in them as is required of the medical student, and in common with him has free access to the Hospitals of the city, to the Microscope Room, the Chemical and Physiological Laboratories, the Dissecting Rooms, Library and Museum of the Medical College, and also to all the courses of University Lectures. The last are special courses delivered by men eminent in their departments, and embrace a wide range of medical and collateral branches.

The term for instruction in the Dental School will commence September 28th, 1871, and will end the middle of February, at which time the dental degrees will be conferred.

The Degree of Doctor of Dental Medicine may be conferred upon each candidate of adult age, of good moral character, who shall have pursued his professional studies three years under competent instructors and attended two full courses of lectures in this institution; except that a certificate of attendance upon one course of lectures in any respectable dental or medical college, or five years reputable practice, may be considered a substitute for the first course; provided such candidate maintain a thesis, and undergo an examination to the satisfaction of the Faculty, and convince the Professors of Operative and Mechanical Dentistry of his ability to meet the requirements of his art.

He must also deposit with the Dean, to be placed in the Museum of the College, a specimen of mechanical dentistry or of practical or pathological anatomy, prepared during the course under the eye of the instructor.

The fees of the Dental Department are as follows:—

Matriculating Fee, - - -	$5.00
Full course of Lectures, including demonstrator's tickets, - -	110.00
For Graduation Fee, - - -	30.00

Further information will be given by the Acting Dean, Dr. Thomas B. Hitchcock, at his office, No. 222 Tremont Street.

HOSPITALS.

Massachusetts General Hospital, Blossom St. Incorporated in 1811. B. S. SHAW, M.D., Resident Physician. 175 beds. Patients suffering from medical or surgical diseases received from any part of the United States or the Provinces. In addition to 1300 patients treated within the Hospital during the last year, about 9500 received advice as out-patients. Students are admitted to the clinical visits of the Physicians on Monday at 10 o'clock and Thursday at 8 o'clock; and to the surgical visits on Saturday at 10 o'clock. Operations are performed in the amphitheatre before the class on Saturday at 11 o'clock. In January of each year two House Pupils are appointed in the medical and four in the surgical department. They are selected from the students of the medical school, and enter on their duties in May.

The City Hospital, Harrison Avenue, corner of Concord Street. (South End cars from Scollay Square.) Incorporated in 1864. L. A. CUTLER, Superintendent. 250 beds. For the use of patients resident in Boston. Students are admitted to the clinical visits of the Physicians on Tuesday at 9 o'clock, and to the surgical clinic on Tuesday and Friday at 10 o'clock. An ophthalmic clinic is held by Dr. Williams on Monday, Wednesday and Friday at 9 o'clock; an aural clinic by Dr. Green on the same days and hour; and a clinic on Diseases of the Skin by Dr. Damon on Tuesday at 11 o'clock. The surgical out-patient department is open to students every morning from 10 to 11. Operations are performed in the amphitheatre before the class on Friday at 11 o'clock. In February of each year, three House Physicians, three House Surgeons and an Ophthalmic Externe are appointed by competitive examination. They enter on their duties in May.

Massachusetts Charitable Eye and Ear Infirmary, Charles Street, near Cambridge. Organized in 1826. Treats all patients, making application for Diseases of the Eye and Ear. Five thousand patients are annually cared for at this institution. Students are allowed to attend the practice of the Surgeons on Monday and Friday throughout the year, from 9 to 11 o'clock. Operations generally at 10 o'clock. Physicians are invited to attend any day from 9 to 11 o'clock. During the winter clinical instruction will be given by Dr. Blake on the diseases of the ear by lectures and demonstrations, at stated hours, which will be announced at a future time.

U. S. Marine Hospital, Chelsea. (Chelsea Ferry-boat, foot of Hanover Street.) A. B. BANCROFT, M.D., Superintendent. Receives all patients needing treatment from the merchant marine service at this port. Especial advantages are offered for the study of all those diseases to which sailors are liable. Students visit the Hospital every day at 9 o'clock. The Superintendent appoints resident pupils who enter on their duties in April.

Boston Dispensary, Bennet Street, corner of Ash. (South End cars from Scollay Square.) SAMUEL A. GREEN, M.D., Superintendent. During the year ending October 1, 1871, 17,704 patients were treated at the Central Office, and 9,198 by the District Physicians; in all, 26,902 patients. Students attend the practice of the physicians and surgeons at the Central Office on Tuesday and Friday at 9 o'clock. Special departments are devoted to surgical diseases and aural surgery, and to diseases of women, of men and of children. Cases of midwifery are supplied from the Dispensary districts to students of the third year, on application to the instructor in obstetrics.

The Children's Hospital, 1429 Washington Street. (South End cars.) Incorporated in 1869. 35 beds. Devoted to the medical and surgical care of children between the ages of two and twelve, resident in Boston and to those non-resident who pay a reasonable board. Visits can be made on proper application to the physician or surgeon in attendance.

BOYLSTON MEDICAL SOCIETY.

Organized in 1811, for the purpose of promoting emulation and inquiry among the students at the Medical School connected with Harvard University. The immediate members are students attending the winter session of the school, and are elected at stated meetings of the society. It is presided over by a physician, selected by the members. The meetings are held in the Library of the Medical College on Friday at 7.30 o'clock. The officers of the Society are D. H. Hayden, M.D., President; E. G. Cutler, Secretary.

MEDICAL LIBRARIES.

There are several extensive collections of books on medical subjects in Boston, which are accessible to students. In addition to those named below, many physicians have large and important libraries, particularly rich on certain subjects.

Public Library, Boylston Street, near Tremont, 160,000 volumes, of which 6,500 are medical. The library can be consulted by any person making application. Books can be taken from the library by any inhabitant (a limited stay in the city constitutes one such), on presentation of his library card. The card is given on application at the Library.

Boston Athenæum, Beacon Street, near Park, 90,000 volumes, 4,500 of which are medical. The privileges of this private library can be enjoyed through friends who may be stockholders.

Library of the Massachusetts Medical College. A large library of standard books of reference and recent authorities is open to the student on the deposit of $5, to be returned to him when he shall cease to use the library and has returned all books loaned to him. The library room is open daily.

The General Library of the University, comprising 123,000 volumes, is also open to students.

The Treadwell Library, at the Massachusetts General Hospital, Blossom Street, 5,000 volumes. This collection was the gift to the Hospital of the late Dr. Treadwell, of Salem. It is for the use of the officers of the Hospital, and may be consulted by others by special favor.

PRIZES.

The following prizes are offered for competition by physicians and students.

Boylston Medical Prizes.—The following are the questions proposed for 1872:—

1. The Pathology of the Malignant and Semi-Malignant Growths.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of Two Hundred Dollars.

2. The Pathology and Treatment of Sunstroke.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of One Hundred and Fifty Dollars.

Dissertations on these subjects must be transmitted, post-paid, accompanied by a sealed envelope containing name and address of author, to John Jeffries, M.D., Boston, *on or before the first Wednesday in April*, 1872.

The following are the questions proposed for 1873:—

1. Electro-therapeutics.

2. The Value of Chemistry to the Medical Practitioner.

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1873, will be entitled to a premium of One Hundred and Fifty Dollars.

Dissertations on these subjects must be transmitted as above, on or before the first Wednesday in April, 1873.

Fiske Fund Prizes.—The Trustees propose the following subjects for 1872:—

1. Hydrate of Chloral: its Physiological Effect and Therapeutical Uses.

2. Cundurango: its History and Medical Properties.

To the author of a dissertation, considered worthy of a prize, upon the first subject they offer one hundred, and upon the second, two hundred dollars.

Essays must be sent to Dr. S. A. Arnold, Providence, R. I., with author's name in sealed envelope, on or before May 1, 1872.

Warren Prize.—The income of two thousand dollars for three years, will be awarded to the author of the best original dissertation, considered worthy of a prize, on the subject of Experimental Researches on the Elimination of Drugs by the Mammary Glands.

Dissertations, accompanied with a sealed envelope, containing the name and address of the writer, must be sent on or before the 1st of February, 1874, to Dr. BENJ. S. SHAW, Resident Physician, Mass. Gen. Hospital, Boston.

Boylston Medical Society Prizes.—Two prizes, of thirty and twenty dollars respectively, will be awarded for the most approved dissertations, considered worthy, on medical subjects, to be selected by the author. Dissertations must be placed in the hands of the President of the Society on or before the 31st of January, together with a sealed envelope containing name and address of the author. Decision of the Committee to be announced at the last meeting of the Society in February.

Jacobi Prize.—A prize of four hundred dollars will be awarded for the best essay, considered worthy, on A History of the Diseases of Infancy and Childhood in the United States, and of their Pathology and Therapeutics.

Dissertations must be sent, post-paid, accompanied by a sealed envelope containing name and address of author, to Dr. A. E. M. Purdy, 123 East Thirty-eighth Street, New York, on or before January 1st, 1873.

MASSACHUSETTS MEDICAL SOCIETY.

Founded 1871. President, Samuel A. Fisk, M.D., of Northampton; Recording Secretary, Charles W. Swan, M.D., of Boston.

Admission of Members.—"No person shall hereafter become a member of the Massachusetts Medical Society, except upon examination

by the Censors of said Society; and any person of good moral character, found to possess the qualifications prescribed by the rules and regulations of said Society, shall be admitted a fellow of said Society."*

The By-Laws of the Society referred to in the Special Law of the State are as follows:—

"1 Any person may be admitted a member of the Massachusetts Medical Society, who shall have passed a satisfactory examination before a Board of Censors, as to his credentials, personal and medical qualifications, and character, and shall have signed the By-Laws.

"The candidate shall be a person of sound mind, and of good moral character; shall be not less than twenty-one years of age; shall have such an acquaintance with the Latin language as is necessary for a good medical and surgical education; and shall have acquired the principles of geometry and experimental philosophy. He shall have studied three full years under the direction, and shall have attended the practice, of some respectable physician or physicians. He shall have attended two full courses of lectures on anatomy, physiology, chemistry, materia medica, midwifery, and the theory and practice of medicine and surgery.

"No person shall hereafter be admitted a member of the Society who professes to cure diseases by Spiritualism, Homœopathy or Thomsonianism.

"II. Candidates shall be examined, at any stated meeting of the Censors, in each and all the branches mentioned in Article I. of the By-Laws. If the examination be satisfactory to the major part of the Censors present, the candidate shall be admitted a Fellow; but, if unsatisfactory, he shall not be re-examined by any Board of Censors in less than six months."†

The Censors of Suffolk District (who are empowered to act for the Society and to examine all those who have not a residence in some other district of the State) will meet at No. 15 Chestnut Street, Boston, on the day immediately succeeding the examination of the Medical Department of the University, and at other stated times as announced by advertisement. The Censors of the other Districts will meet at the same place and on the same day as the District Societies to which they belong.

MASSACHUSETTS DENTAL SOCIETY.

1864. President, A. A. Cook, D.D.S., Milford; Secretary, Chas. Neilson, D.M.D., Boston.

Admission of Members.—This Society shall consist of Active, Corresponding and Honorary members.

The Active members shall consist of practitioners of Dentistry residing in the State of Massachusetts. They shall be 21 years of age, of good moral character, and shall have received a Diploma from a respectable Medical or Dental College, or shall have been five years in the practice of Dentistry, including term of pupilage.

Corresponding members shall consist of practitioners of Dentistry residing in this or other States of the Union, or in foreign countries, who manifest a disposition to advance the science and art of the profession by contributing to its literature.

The Honorary members shall consist of practitioners of Dentistry who have honorably retired from practice; of practitioners of Medicine and Surgery; or others who have made valuable contributions to the science of Dentistry.*

MEDICAL SOCIETIES IN BOSTON.

Boston Medical Association, 1806. Secretary, J. Collins Warren, M.D.

Boylston Medical Society of Harvard University, 1811. President, D. H. Hayden, M.D.; Secretary, E. G. Cutler.

Boston Society for Medical Improvement, 1828. Secretary, F. B. Greenough, M.D.

Boston Society for Medical Observation, 1846. Secretary, W. L. Richardson, M.D.

Suffolk District Medical Society, 1849. President, G. H. Lyman, M.D.; Secretary, D. H. Hayden, M.D.

Massachusetts Medical Benevolent Society, 1857. President, G. C. Shattuck, M.D.; Secretary, Hall Curtis, M.D.

Boston Obstetrical Society, 1860. President, C. E. Buckingham, M.D.; Secretary, J. B. Treadwell, M.D.

Boston Society of Medical Sciences, 1869. Secretary, Edward Wigglesworth, M.D.

WHAT CAN YOU DO?—America does not ask of her son, where were you born? or where were you educated? or who was your father, or who was your mother? but *what can you do*, and do well? And she demands one thing more, a faithful, legitimate, and conscientious use of the means and capacity he possesses, a faithful discharge of the social and professional duties devolving upon him, of religion, of love to his neighbor, and she says to him, do this, and do it well, and I will give you my choicest crown and my richest blessing, the declaration, and the *decoration*, of a worthy citizen and honest man. There can be no stronger stimulus to honest effort, and there is no richer reward on this earth."—*O. C. DeWolf, M.D.*, 1871.

WARD NICHOLAS BOYLSTON.—More than half a century ago, a gentleman of wealth and culture commenced spending his summers here [Princeton, Mass.], influenced, doubtless, in part, no less by the natural scenery and salubrity of the place than by the richness and fertility of its soil. His mortal remains rest near where we are now assembled, and, as a friend of science and humanity, I wish on this occasion to pay a passing tribute to his memory. I refer to Ward Nicholas Boylston. Having his birth and education in Boston, while a young man he visited London, in 1775, where he afterwards

* Chapter 82, Massachusetts Laws, 1859.

† A Digest of the Acts of the Commonwealth relating to the Massachusetts Medical Society, together with the By-Laws, &c. Boston: 1861.

* Constitution of the Massachusetts Dental Society Article III.

resided for over twenty-five years. When there, he became familiarly acquainted with the celebrated Dr. John Hunter and other eminent medical philosophers, and partly by means of this acquaintance, and partly from the fact that he had had two uncles—distinguished members of the profession—he became greatly interested in all matters pertaining to medicine. Consequently, upon his return to our country, in the year 1800, among his first acts were three liberal donations to Harvard University, to establish, 1st, a medical library; 2d, to found an anatomical museum; and 3d, to furnish prize medals for successful dissertations on difficult medical subjects. By means of this last bequest, many valuable essays, constituting already several volumes, have been prepared on some of the most important and perplexing questions in medicine, and these contributions will doubtless continue as long as there is any need of the science.—*Nathan Allen, M.D.*, 1871.

INSTRUCTION IN MINOR SURGERY.—Dr. Brown, one of the Surgeons of the Boston Dispensary, will receive six pupils for instruction in Minor Surgery six days in the week during his term of service in January, February and March.

DR. BIGELOW'S ADDRESS ON MEDICAL EDUCATION IN AMERICA.—In connection with the subject of medical education, we commend to the attention of the student the excellent address delivered by Dr. H. J. Bigelow before the Massachusetts Medical Society, in June last, and soon to be issued by that body.

THE attention of students is called to the Quiz to be conducted by Drs. Gay and McCollum, in our advertising columns.

VERMONT MEDICAL SOCIETY.—The fifty-seventh Annual Meeting of the Vermont Medical Society will be held at Montpelier, Wednesday and Thursday, October 11 and 12, 1871, commencing at 11, A.M., on Wednesday. The Board of Councillors will meet at 10, A.M., Wednesday. The names and credentials of persons desiring to become members of the Society must be presented before this Board. An address will be delivered by the President, and discussions will take place on consumption and on the uses and abuses of bloodletting. The members will be furnished with Return Certificates, by the Secretary, over the roads under the control of the Vermont Central Railroad, provided twenty-five persons are in attendance.

The Secretary specially requests the members of the Society to gather up incidents connected with the history of the early practitioners of medicine in their several localities, for presentation at the annual meeting.

Arrangements have been made at the Pavilion Hotel for the accommodation of members of the Society, at a reduction from the usual rates.

IT is rumored that M. Nélaton, the distinguished French surgeon, intends making London his future residence.

TO CORRESPONDENTS.—Communications accepted:—Case of Rupture of Right Auricle.—Some Remarks on Cataract.

PAMPHLETS RECEIVED.—General Description of the City of Nassau and the Island of New Providence, West Indies, with Meteorological Tables, &c. Pp. 35.—An Address delivered Sept. 19, 1871, at the Annual Exhibition of the Farmers' Club, Princeton, Mass. By Nathan Allen, M.D., Lowell. Pp. 38.—Albany Hospital. A Statement from the Governors of its History and present Condition. Pp. 11.—The Physiology and Pathology of Mind in Lower Animals. By W. Lander Lindsay, M.D., F.R.S.E., Physician to the Murray Royal Institution (for the Insane), Perth. Printed in Edinburgh. (From the Author.) Pp. 19.—Twenty-third Annual Catalogue and Report of the New England Female Medical College. Pp. 24.—Report of Mal-practice Trial. W. C. Drew *vs.* G. B. Bullard and John H. Peck. June Term of Caledonia Co. (Vt.) Court, 1871. Pp. 28.—Report of the Superintendent of Health upon the subject of Fat and Lard Melting. Presented to the Board of Aldermen, Providence, R. I., Sept. 4, 1871. Pp. 12.—Twentieth Annual Report of the Boston Provident Association, May, 1871. Pp. 24.—The United States Patent Law. Instructions how to obtain Letters Patent for New Inventions. By Munn & Co., Solicitors of Patents, No. 37 Park Row, New York. Pp. 120.

MARRIED,—At Athol, September 15th, Dr. Vernon O. Taylor to Miss Sabra J. Lord.—At Leipzig, Germany, Sept. 9th, Dr. H. P. Bowditch, Boston, to Miss Selma Knauth, of Leipzig.

DIED,—At Beverly, Sept. 27th, John F. Meacham, M.D., aged 24.

Deaths in seventeen Cities and Towns of Massachusetts for the week ending Sept. 30, 1871.

Cities and Towns.	*No. of Deaths.*
Boston	113
Charlestown	12
Worcester	20
Lowell	27
Milford	3
Chelsea	9
Cambridge	15
Salem	3
Lawrence	14
Springfield	4
Lynn	12
Fitchburg	1
Taunton	9
Newburyport	7
Fall River	20
Haverhill	3
Holyoke	4
	276

Prevalent Diseases.	
Consumption	51
Smallpox	19
Cholera infantum	19
Dysentery & Diarrhœa	14
Typhoid fever	12
Pneumonia	12
Croup	7

The deaths from smallpox were as follows: sixteen in Lowell, two in Boston, one in Worcester.

GEORGE DERBY, M.D.,
Secretary of State Board of Health

DEATHS IN BOSTON for the week ending Saturday, Sept. 30th, 113. Males, 53; females, 60. Accident, 1—apoplexy, 1—anæmia, 1—inflammation of the bowels, 2—bronchitis, 4—inflam. of brain, 1—cancer, 2—congestion of the brain, 1—disease of the brain, 5—burn, 1—cholera infantum, 6—consumption, 17—convulsions, 3—croup, 3—cyanosis, 1—debility, 6—diarrhœa, 3—dropsy of brain, 1—dysentery, 1—erysipelas, 1—typhoid fever, 7—puerperal fever, 1—disease of the heart, 7—jaundice, 1—intemperance, 1—disease of the kidneys, 2—disease of the liver, 2—inflammation of the lungs, 7—marasmus, 6—measles, 1—old age, 1—paralysis, 4—premature birth, 1—smallpox, 2—teething, 1—syphilis, 1—tumor, 1—disease of the uterus, 1—whooping cough, 1—unknown, 4.

Under 5 years of age, 50—between 5 and 20 years, 5—between 20 and 40 years, 31—between 40 and 60 years, 14—above 60 years, 13. Born in the United States, 86—Ireland, 17—other places, 10.